

[LIGHT EMITTING DIODE HAVING AN INSULATING SUBSTRATE]

Abstract of Disclosure

An LED includes an insulating substrate; a buffer layer positioned on the insulating substrate; an n^{+} -type contact layer positioned on the buffer layer, the contact layer having a first surface and a second surface; an n-type cladding layer positioned on the first surface of the n^{+} -type contact layer; a light-emitting layer positioned on the n-type cladding layer; a p-type cladding layer positioned on the light-emitting layer; a p-type contact layer positioned on the p-type cladding layer; an n^{+} -type reverse-tunneling layer positioned on the p-type contact layer; a p-type transparent ohmic contact electrode positioned on the n^{+} -type reverse-tunneling layer; and an n-type transparent ohmic contact electrode positioned on the second surface of the n^{+} -type contact layer. The p-type transparent ohmic contact electrode and the n-type transparent ohmic contact electrode are made of the same materials.